

Draft

Environmental Impact Statement Rasmussen Valley Mine

Caribou County, Idaho

Lead Agencies:



U.S. Department of the Interior
Bureau of Land Management
Pocatello Field Office



U.S. Department of Agriculture
Forest Service
Caribou-Targhee National Forest



Cooperating Agencies:



U.S. Army Corps of Engineers



Idaho Department of
Environmental Quality

September 2015



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USDI Bureau of Land Management
Idaho Falls District
<http://www.id.blm.gov/>

In Reply Refer To:

BLM: 3500
I-05975

FS: 2820/2720

Dear Reader:

Enclosed for your review is the Draft Environmental Impact Statement (Draft EIS) for Agrium's proposed Rasmussen Valley Mine (Proposed Action) located approximately 18 miles northeast of Soda Springs in Caribou County, Idaho. This Draft EIS was prepared jointly by the Bureau of Land Management, Pocatello Field Office (BLM), and the U.S. Forest Service, Caribou-Targhee National Forest (USFS) in cooperation with the Idaho Department of Environmental Quality and the Walla Walla District of the U.S. Army Corps of Engineers. Other participating agencies included the Idaho Department of Lands, the Idaho Department of Fish and Game, the Idaho Department of Water Resources, and the U.S. Fish and Wildlife Service. The Draft EIS analyzes the direct, indirect, and cumulative effects of the proposed mine. The Draft EIS addresses those issues identified by the public and the Indian Tribes as well as those identified by the BLM, USFS, cooperating and participating agencies. Agrium proposed a mine consisting of six open pits, haul roads, water management structures, overburden piles, and growth medium stockpiles. Public scoping for the Rasmussen Valley Mine was conducted in March 2011 to identify issues with the Proposed Action to be analyzed in the Draft EIS. Based on the scoping comments received, Agrium responded with an alternative called the Rasmussen Collaborative Alternative (RCA) that included changes in mine sequencing and waste disposal locations. An alternative element is a variation in the location or design of a specific aspect or element of the plan to address a particular issue of concern. Seventeen other alternative elements proposed by Agrium were also considered, but eliminated from further evaluation. The Proposed Action, the RCA and a no action alternative were carried forward for full analysis in the Draft EIS.

Public comments on the Draft EIS will be accepted during a 45-day public review and comment period. Following the 45-day comment period, a Final EIS will be prepared. The Final EIS will include the mitigation measures that address predicted direct and indirect impacts from Agrium's proposed mining operations and potential cumulative impacts from other past, present and reasonably foreseeable future activities in the area.

That portion of the proposed project related to USFS special use authorizations for off-lease activities will be subject to an objection process after the release of the Final EIS pursuant to 36 CFR 218 Subparts A and B. Only those who provide comments during the Draft EIS comment period or who have previously submitted specific written comments on the project, either during scoping or other designated opportunity for public comment, will be eligible as objectors (36 CFR 218 .5). BLM appeal procedures found in 43 CFR 4 apply to the portion of the project related to the Federal mineral lease.

Comments, including names and street addresses of respondents, will be available for public review at the BLM Pocatello Field Office and subject to disclosure under the Freedom of Information Act (FOIA).

They will be published as part of the Final EIS and other related documents. Individual respondents may request confidentiality. If you wish to withhold your name and/or address from public review or disclosure under the FOIA, you must state this prominently at the beginning of your written comment. The BLM will honor such requests to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, are available for public inspection in their entirety.

Comments on the Draft EIS will be accepted until the close of business on November 2, 2015. Please send written comments by mail or email to one of the following addresses:

Email: blm_id_rasmussenvalleyeis@blm.gov

Fax: 303-471-3472

Mail: Rasmussen Valley Mine EIS

ARCADIS U.S., Inc.
630 Plaza Drive, Suite 100
Highlands Ranch, Colorado 80129

Two public meetings are planned during the Draft EIS comment period. BLM will announce the dates, times and locations of these meetings and any other public involvement activities at least 15 days in advance through public notices, media news releases. During the public meetings verbal and written comments will be accepted. All comments received during the public comment period will be fully considered and evaluated for preparation of the Final EIS

The Final EIS may be published in an abbreviated format, but referencing this Draft EIS, so please retain this draft document for future reference. Your interest in the management of public lands is appreciated.

If you would like further information on this project, questions can be directed to Bill Volk, BLM EIS Project Lead, (208) 236-7503

Sincerely,



Garth Smelser
Forest Supervisor
Caribou-Targhee National Forest



Mary D'Avarsa
District Manager
BLM, Idaho Falls District

Cc: w/o enclosures
BLM, Cundick
USFS, Isaacs

DRAFT ENVIRONMENTAL IMPACT STATEMENT RASMUSSEN VALLEY MINE

LEAD AGENCIES:

U.S. Department of the Interior
Bureau of Land Management
Idaho Falls District
Pocatello Field Office

U.S. Department of Agriculture
Forest Service
Caribou-Targhee National Forest

COOPERATING AGENCIES:

U.S. Army Corps of Engineers, Walla Walla
District

Idaho Department of Environmental Quality

PROJECT LOCATION:

Caribou County, Idaho

DATE DRAFT EIS FILED WITH EPA:

September 2015

**QUESTIONS ON THE DRAFT
EIS CAN BE DIRECTED TO:**

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EIS Project Manager
BLM Pocatello Field Office
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ABSTRACT

This Draft Environmental Impact Statement (Draft EIS) analyzes impacts related to mining phosphate ore at the Rasmussen Valley Mine in Southeastern Idaho. The Proposed Action includes developing six mine pits, haul roads, water management structures, and overburden disposal areas. Use of the existing fertilizer plant would continue in Soda Springs. Alternatives to the Proposed Action are also analyzed and site-specific mitigation measures developed. At this time the BLM and USFS Preferred Alternative is the Rasmussen Collaborative Alternative (RCA) because of revisions to overburden storage, the haul road, and the cap and cover design that would reduce the impacts of the Proposed Action.

RESPONSIBLE OFFICIAL FOR DEIS:

Mary D'Aversa
BLM Idaho Falls District Manager

Garth Smelser
USFS, Caribou-Targhee National Forest

EIS NUMBER:

BLM-ID-I020-2015-0032-EIS

EXECUTIVE SUMMARY

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The following is provided as a summary of the analyses that have been conducted for the Rasmussen Valley Mine Project. This includes the Proposed Action as well as alternatives that were developed to address issues raised during public scoping. This summary is not a substitute for review of the complete Draft Environmental Impact Statement (Draft EIS).

ES.1 PROPOSED ACTION

This Draft EIS was prepared jointly by the Bureau of Land Management (BLM), Pocatello Field Office and the U.S. Forest Service (USFS) Caribou-Targhee National Forest (CTNF), in cooperation with the Idaho Department of Environmental Quality (IDEQ) and the Walla Walla District of the U.S. Army Corps of Engineers (USACE) in response to the 2011 Mine and Reclamation Plan (Proposed Action) from Nu-West Industries, Inc., doing business as (dba) Agrium Conda Phosphate Operations (Agrium) for development of the Proposed Action (Agrium 2011). Other participating agencies include the Idaho Department of Lands (IDL), the Idaho Department of Fish and Game (IDFG), the Idaho Department of Water Resources (IDWR), and the U.S. Fish and Wildlife Service (USFWS). Agrium has proposed to develop the Rasmussen Valley Mine for the recovery of phosphate ore reserves contained within Federal Phosphate Lease I-05975 (the Lease), as directed by the Mineral Leasing Act of 1920.

The Proposed Action is located on the southeast end of Rasmussen Ridge and in adjacent portions of Rasmussen Valley in Caribou County approximately 18 miles northeast of Soda Springs, Idaho. The Proposed Action is within known phosphate leasing area (KPLA) boundaries. Proposed mining and associated activities would occur predominantly within the Caribou portion of the Caribou-Targhee National Forest on land administered by the Soda Springs Ranger District. Portions of the Proposed Action would also occur on public land administered by the BLM, the Blackfoot River Wildlife Management Area (WMA; state land administered by the IDFG), state land administered by the IDL, and areas of private land. The mineral estate is administered by the BLM Pocatello Field Office. The BLM would be the lead agency for the Draft EIS, with assistance provided by the USFS and other cooperating agencies. The Proposed Action (Agrium 2011) would develop a new open pit phosphate mining operation on the Lease that would include external overburden piles, a haul road, a water management plan, and other ancillary facilities. Ore would be processed off site at Agrium's Conda Phosphate Operations (CPO) Fertilizer Manufacturing Plant northeast of Soda Springs. The Lease conveys to Agrium the right and privilege, subject to the terms and conditions of the Lease, to explore and develop the federally owned mineral estate and to use the surface of the federal lease for related mine activities.

Under the Proposed Action, phosphate ore would be mined and hauled on new and existing haul roads to Agrium's Wooley Valley Tipple and from there by rail on existing track to Agrium's CPO approximately 12 miles to the southwest for processing. No processing other than crushing and screening operations would occur at the mine site. The Rasmussen Valley ore to be mined under the Proposed Action is expected to be similar to that produced at other Agrium mines in the area. Agrium has proposed extending the project pit beyond the Lease boundary in several locations to recover contiguous federal phosphate mineral and place mine facilities outside the existing lease. To accommodate these extensions, Agrium would request Lease modification in portions of T7S R44E Sections 6 and 9.

The phosphate ore deposit is a portion of the phosphate-rich Meade Peak Member of the Permian-age Phosphoria Formation. The Meade Peak Member and certain strata within the Rex Chert Member of the Phosphoria Formation have the potential for releasing constituents of potential concern (COPCs) including selenium. Overburden (rock and sediments from the mine that do not contain economic ore) that may contain Meade Peak or specific Rex Chert material, and therefore may have high concentrations of selenium and other COPCs, is designated in this Draft EIS as “Meade Peak-containing” material or “Meade Peak overburden.”

The Proposed Action would consist of:

1. The Rasmussen Valley Mine open pit would be developed in six sequential phases.
2. Two permanent external overburden piles would be developed and reclaimed downslope from the pit area and haul road and designated the North Overburden Pile and South-South Overburden Pile.
3. Two permanent external overburden piles would be developed contiguous with and uphill from the pit and designated as the North External Overfill Pile and the South External Overfill Pile.
4. Two temporary external overburden piles would be developed downslope from the pit area and haul road, designated the South Main Temporary Overburden Pile and a portion of the North Overburden Pile.
5. Two temporary overburden piles would be developed within the pit boundary, designated as the North and South Temporary Overburden Piles.
6. A stockpile area could be optionally developed and reclaimed downslope from the pit area and haul road for temporary storage of ore or Meade Peak-containing materials as operational demands dictate and designated as the Ore Stockpile Area.
7. Three growth medium (GM) stockpiles would be developed, used for reclamation activities, and reclaimed.
8. Access and haul roads would be constructed, operated, and reclaimed.
9. Portions of Lanes Creek and Diamond Creek County Roads would be permanently realigned and the abandoned road reclaimed.
10. Temporary power lines would be constructed, operated, and reclaimed.
11. A staging area would be constructed, operated, and reclaimed.
12. Dust suppression supply, water quality monitoring, and water supply wells would be constructed, operated, and reclaimed.
13. Surface water sediment controls would be constructed, operated, and reclaimed.
14. A fuel storage area would be constructed, operated, and reclaimed.

The Rasmussen Valley ore deposit would be mined from south to north over approximately 2.4 miles. Each phase would be approximately 1,500 to 3,500 feet long and 600 feet wide. There would be some concurrent mining of multiple phases to maintain a constant grade of ore for processing, to maintain the appropriate stripping ratio for overburden management, and to allow large excavation equipment to continue to operate while smaller equipment is mining the narrow lower elevations. The designed ultimate pit depth is controlled by the economic strip ratio. Factors that control economic strip ratio are overburden thickness, ore quality, estimated value of phosphate ore, and access. The mining plan has been designed to maximize the recovery of the economic phosphate and to minimize any long-term effects to the environment.

The mine may be operated up to 24 hours per day year-round. Mining would occur on a series of 40-foot cuts with 30-foot catch benches for every 80 feet of depth. Overburden would either be ripped or blasted, depending on the hardness of the material. Loose material would be loaded onto haul trucks and transported to the Wooley Valley Tipple, stockpiles, external overburden piles, or pit backfill. The mining sequence would allow coordination between areas being mined and areas being backfilled. Agrium would stockpile any soils salvaged during mining that are suitable for use in reclamation.

Non-Meade-Peak-containing material removed during Phase 1 would be used to construct haul roads where fill is needed and, if necessary, to build up the base for an optional Ore and Temporary Overburden Stockpile Area for ore and overburden storage before completion of the haul road to the Wooley Valley Tipple. The remaining non-Meade-Peak-containing material would be placed in the North Overburden Pile or the South-South Overburden Pile, and Meade Peak overburden would be temporarily placed in the South Main Overburden Pile or one of the temporary overburden piles. Several external haul roads would be required through the life of proposed mining activities to haul overburden, GM, and ore. All of these roads would be constructed of non-Meade-Peak-containing materials with side berms where needed for safety. All haul road disturbance would be reclaimed at the end of the project.

Meade Peak overburden mined from the Rasmussen Valley deposit would be placed directly in the pit as backfill or temporarily stored on external overburden piles for later use as backfill. A total of five overburden piles would be used through the life of proposed mining activities, two of which would be temporary overburden piles inside the ultimate pit crest. The majority of overburden mined would be directly backfilled into the previous phases without being stockpiled. All Meade Peak-containing material would be used to permanently backfill pits or placed in permanent external overburden piles. Meade Peak overburden would generally be placed directly in mined-out phases, but some limited temporary storage in external overburden piles may be necessary.

Backfilled areas and previously disturbed areas would be reclaimed concurrently with mining. GM that has been temporarily stored at external storage locations throughout the project would be used for this concurrent reclamation. Wherever practicable, Agrium would use GM salvage for direct placement on areas being reclaimed. Except for the cover designed for Meade Peak-containing backfill, GM would be distributed over areas to be revegetated to a thickness of 12 inches. The cover design for the backfill is topped with a minimum GM thickness of 24 inches.

The objectives of reclamation are:

- To re-establish regional drainage patterns
- To provide vegetative cover suitable to stabilize the surface and re-establish the pre-mining multiple land uses of recreation, wildlife habitat, and livestock grazing
- To limit the risk of long-term, post-mining environmental impacts.

Reclamation would consist of backfilling open pits, shaping overburden piles and haul roads, cover placement, GM handling, re-establishing drainage patterns, removing project-related facilities, and re-establishing a vegetation cover. All portable equipment and facilities would be removed from the site after mining. The staging area would be ripped and reggraded to approximate the natural topography and capped with a minimum of 12 inches of GM. When backfill- and overburden-shaping, cap-and-cover placement, and re-vegetation are completed, the surface would approximate surrounding topography. External overburden piles would be

shaped to have maximum 3H:1V slopes. All overburden areas would be shaped to eliminate ponding of meteoric waters and reduce infiltration. Haul roads would also be reclaimed when no longer needed. The planned final topography has been developed based on the current understanding of the ore body geometry, mining methods, mining rates, and overburden swell parameters.

The proposed pits would truncate existing drainage basins during mining. These drainages would need to be re-established as part of the planned final topography once backfilling of a phase reaches the existing grades. The re-established channels would be designed to accommodate the 100-year, 24-hour storm event. Channels would be constructed with 3H:1V side slopes and lined to reduce runoff infiltration into the backfill.

The pit would be backfilled up to the west crest, capped with a minimum of 3 feet of non-Meade-Peak-containing material, and covered with a minimum of 2 feet of GM. This cover system is designed to limit the amount of net infiltration of meteoric water through the Meade Peak-containing material by increasing runoff and increasing moisture storage in the cover, making the moisture available for plant uptake and evapotranspiration. No Meade Peak-containing material would be left exposed. Non-Meade-Peak-containing material would be sloped east-to-west at a 2 percent gradient to ensure that runoff of any post-mining storm would flow away from the backfilled areas and toward re-established drainages to reduce the risk of forming a post-mining pit lake. Upon completion of reclamation, pit wall exposures would remain in-place along the norther and central portion of the pit.

Surface disturbance resulting from the Proposed Action would total 439.8 acres. Of this total acreage, the pit and backfill footprint of the six phases would disturb a total of 195.4 acres. However, because of the progressive open pit backfilling and concurrent reclamation, the maximum unreclaimed pit disturbance at any one time would be minimized.

The mine design, sequencing, and development and the development of ancillary facilities are discussed in detail in **Section 2.3.3** of this Draft EIS. Additional detail is presented in the 2011 Mine and Reclamation Plan (Agrium 2011).

Measures that would be employed to protect natural resources including surface and groundwater, livestock and wildlife, cultural resources, wetlands, soils, vegetation, air, and fisheries and aquatic resources are summarized in **Section 2.3.4**. These would include best management practices (BMPs) for mine operations, overburden handling, water management, and reclamation.

The proposed mining activities carry the potential to release pollutants that can be transported by storm water runoff. These pollutants could enter surface water and indirectly affect other resources. Pollutants could include selenium and other COPCs from exposed Meade Peak-containing materials. Agrium would design and implement appropriate BMPs to control erosion, sedimentation, and COPCs to protect surface waters in and around the Proposed Action. In addition, Agrium would limit the quantity of Meade Peak-containing material that would be exposed throughout the life of proposed mining activities through direct backfilling, capping with a 5-foot thick cover consisting of a minimum 3-foot thickness of non-Meade-Peak-containing material overlain by a minimum 2 feet of GM. Surface water drainages would be constructed in sequence with the mining phases to minimize runoff into the pit and excessive precipitation contact with exposed shales. Surface water control structures would include structures designed to reduce or eliminate the risk of surface water contamination. Basins to retain runoff water and associated silt would be constructed at strategic locations to collect and contain water exposed to mining disturbances and overburden. Conveyance ditches along the outer perimeter of the

overburden piles and stockpiles would collect and carry runoff from the overburden piles and stockpiles to retention basins.

COPCs mobilized from overburden piles by percolating precipitation infiltration events also carry the potential to enter groundwater systems through infiltration. The potential for introduction of selenium to groundwater is of particular concern at phosphate mines in southeast Idaho. Agrium would protect groundwater resources by managing all of the Meade Peak overburden at the project and through the implementation of BMPs designed to control runoff from mining features. In general, Meade Peak-containing materials would be directly backfilled to previous phases once mining at those phases is completed. If any Meade Peak-containing material is stockpiled, the residence time of the Meade Peak-containing material would be minimized. Meade Peak overburden would be used for backfill in the lower portions of the mined-out pit and covered with a minimum of 3 feet of non-Meade-Peak-containing material and 2 feet of GM. Backfill overburden piles would be graded to reduce runoff and infiltration, and proper revegetation would encourage evapotranspiration of precipitation.

ES.2 ALTERNATIVES

Along with the Proposed Action, the Rasmussen Collaborative Alternative (RCA) and the No Action Alternative were evaluated in the Draft EIS and are described in **Sections 2.5** and **2.6** respectively. Several other alternative elements were also evaluated but dismissed from further evaluation as described in **Section 2.8** of the Draft EIS.

ES.2.1 Rasmussen Collaborative Alternative

In response to several primary issues brought forward during scoping, Agrium proposed an integrated alternative they call the Rasmussen Collaborative Alternative (RCA). This alternative addresses potential COPC impacts to surface waters and groundwater, and decreases overall wildlife habitat impacts while enhancing the reclamation at the adjacent South Rasmussen Mine.

The RCA includes the following:

1. Development of a larger open pit in a sequenced manner, consisting of nine phases, beginning at the northwest and generally progressing southeast. The life of proposed mining activities would be approximately 4.8 years, and the total project duration (including reclamation) would be 7.1 years (**Figure 2.5-2**)
2. Placement of overburden from the initial phases into P4's partially backfilled and reclaimed South Rasmussen Mine pit (located directly northwest of the proposed mining activities), thus increasing the reclaimed area at the South Rasmussen Mine pit
3. Development and reclamation of up to four GM stockpile areas
4. Backfilling the majority of the mined-out pit
5. Construction and reclamation of a staging area similar to that for the Proposed Action
6. Foregoing the power line option and using only electrical generators to power mine facilities such as the staging area
7. Realignment of portions of the Lanes Creek and Diamond Creek County Roads similar to the Proposed Action

8. Construction and reclamation of sediment control structures
9. Construction of two temporary overburden storage piles within the mine footprint
10. Extension of the pit floor to the Lease boundary at the north end to maximize ore recovery
11. Establishment of GM and alluvium storage and borrow areas within portions of the areas previously proposed for external overburden piles in the Proposed Action to be used to store pit and construct a backfill cap
15. Reclamation with a wider variety of revegetation plant species.

The RCA eliminates the following from the Proposed Action:

1. All external overburden storage piles downslope of the mine pit, thereby eliminating piles on potentially unstable areas or areas overlying alluvial aquifers
2. The proposed fuel storage facilities at the staging area (would use the existing Rasmussen Ridge Mine facilities)
3. The proposed power line that would have supplied power to Proposed Action facilities at the staging area
4. Mining below the water table, resulting in less water to manage
5. Eight stream crossings
6. The haul road across the floor of Rasmussen Valley and the crossings at Rasmussen Valley Road and Angus Creek
7. Ninety-eight percent of disturbance to wetlands and waters of the U.S. (WOUS)
8. Sixty-six acres of impacts to aquatic influence zones (AIZs)
9. Twenty acres of disturbance to forested and shrubland habitats

The mining methods for the RCA would be the same as those for the Proposed Action. The overall pit footprint would be somewhat different, and a different set of BLM lease modifications is proposed. USFS Special Use Authorizations, and State of Idaho Temporary Use Authorizations are also proposed to accommodate extension of the mine pit, overfill piles, stockpiles, and ancillary mine features beyond the Lease. As in the Proposed Action, phosphate ore would be mined and hauled to Agrium's Wooley Valley Tipple and from there by rail on existing track to Agrium's CPO approximately 12 miles to the southwest for processing. No processing other than crushing and screening operations would occur at the mine site.

Under the RCA, the ore deposit would be developed in nine phases. The phases would be developed generally from the northwest (mine north) to the southeast over approximately 2.4 miles. The excavations required for the phases would range in length from approximately 1,000 to 2,600 feet and would average approximately 600 feet wide. Pit design and ultimate pit depth would be controlled by the same factors as those addressed in the Proposed Action, except in the southern portions of the pit, where the pit floor would be kept above the expected water table.

Construction of ore haul roads would begin in Phase 1 of mining. As in the Proposed Action, the West Side Haul Road would extend for approximately 2.3 miles along the southwest side of the mine pit. Unlike the Proposed Action (which would begin mining at the southeast end and build the entire West Side Haul Road at the beginning of mining), the RCA would construct the West Side Haul Road in phases concurrent with the mine phases beginning at the northwest end of the

pit. Haul Road 5 (HR-5) would be constructed between the termini of the West Side Haul Road at the northwestern extent of the Lease and the existing P4 and Agrium haul road north of South Rasmussen Mine. The existing haul road connects the Rasmussen Ridge Mines to the Wooley Valley Tipple Haul Road. HR-5 would be constructed through the previously disturbed west limb of South Rasmussen Mine and generally follow the South Rasmussen Mine haul road across the backfilled and reclaimed South Rasmussen Mine pit. Construction of HR-5 would be completed before mining of RCA Phase 1. HR-5 would not cross Rasmussen Valley, and would impose virtually no potential wetlands disturbance. The West Side Haul Road and HR-5 would be used to haul ore to the Wooley Valley Tipple, overburden to backfill the South Rasmussen Mine pit, haul GM and alluvium and provide access between the Rasmussen Valley Mine and the existing Rasmussen Ridge Mines shop.

The majority of overburden mined from Phases 1 and 2 and a portion from Phases 3 and 4 would be directly placed as backfill in an unreclaimed portion of P4's partially reclaimed South Rasmussen Mine. Mining ore was completed at the South Rasmussen Mine in 2013, and reclamation is ongoing. Backfill from the Rasmussen Valley Mine that is place in P4's South Rasmussen Mine would be reclaimed using the same cover as currently approved for the South Rasmussen Mine. All overburden excavated from the Rasmussen Valley mine would be used to backfill either the South Rasmussen Mine pit or the previously mined phases of the Rasmussen Valley Mine. Two temporary internal overburden piles are incorporated into the design: the Central Temporary Overburden Pile and South Temporary Overburden Pile. These temporary overburden piles would be used to store material on backfill within the mine footprint when operations produce more overburden than available open pit volumes can accommodate. Backfill and overfill areas would be graded to a 3H:1V maximum final slope. Most of the GM from Phases 1 through 4 would be temporarily stored and used for reclamation.

Agrium would stockpile for use in reclamation any soils suitable as GM that are removed during mining operations and that are not directly placed for reclamation. Throughout the life of proposed mining activities, GM would be used in concurrent reclamation activities or temporarily stored at external stockpiles throughout the project. External stockpiles downslope of the mine pit would only contain GM. A maximum of four external stockpiles would be used throughout the life of proposed mining activities. The four external stockpiles are designated the North-North Stockpile, North Main Stockpile, Central Stockpile, and the South Main Stockpile. Material would be added to and removed from the four stockpiles throughout the life of proposed mining activities as operations and material needs dictate. These stockpiles would be fully reclaimed after the completion of mining.

The RCA would use diesel generators to provide electrical power to RCA facilities. Supplying on-site diesel power generation would eliminate the disturbance associated with constructing a power line from the existing transmission line located in Upper Valley to the proposed facility location. The necessary number of generators and horsepower of those generators may change through the life of proposed mining activities. For the purpose of the RCA, it is assumed that the generator array currently in use at the Rasmussen Ridge Mine would be sufficient to accommodate operations at the Rasmussen Valley Mine.

A store-and-release cap and cover (Cover C) would be installed over all backfill and overburden piles at the Rasmussen Valley Mine. Cover C would consist of 3 feet of pit alluvium, overlain by 2 feet of external alluvium and GM overlain by 1 foot of pit GM. The 6 feet of cover would retain infiltrating precipitation long enough for plants to transpire a substantial portion of the water thus reducing the amount of water that percolates downward past the root zone and into the underlying overburden or backfill. The 6-foot cover thickness would separate the revegetation root zone from the underlying potentially selenium and COPC containing overburden, thus virtually

eliminating the potential for adverse accumulation selenium and COPCs in reclamation vegetation.

Agrium would employ direct placement of GM on reclaimed areas wherever practical. GM would be salvaged from a mining phase or area before mining that phase or area. Because GM is most efficiently handled in dry conditions, GM would generally be salvaged in the summer to fall.

With the exception of the 6-foot thick Cover C, which has a specific design utilizing GM and alluvium, GM would be distributed over all areas to be revegetated to a depth of 12 inches. Any excess GM would be used to supplement cover over localized disturbances. The ultimate goal would be to maximize the recovery and return to multiple use of this resource. The GM would be spread with dozers, graders, or other appropriate equipment before revegetation.

Surface disturbance resulting from the RCA would total 399.8 acres. Of this total acreage, the pit, backfill, and overfill footprint of the nine phases would disturb a total of 213.2 acres. Because of the progressive open pit backfilling and concurrent reclamation, the unreclaimed pit disturbance at any one time would be minimized.

Water management features for the RCA would be similar to those for the Proposed Action. In comparison to the Proposed Action, fewer water management features would be required for the temporary overburden piles and GM stockpiles for the RCA. Culverts and haul road sediment basins along the West Side Haul Road for the RCA would be similar to those in the Proposed Action. In contrast, where the Rasmussen Valley Haul Road portion of HR-1 would require nine culverts and seven sediment basins in Rasmussen Valley, the HR-5 would require two culverts and two sediment basins where it climbs the slopes of Rasmussen Ridge to reach the P4 South Rasmussen Mine and the existing Rasmussen Ridge mine haul road. Each of the four GM stockpile areas would also have a group of sediment basins along its downslope side.

ES.2.2 No Action Alternative

Under the No Action Alternative, the Rasmussen Valley Mine would not be approved for mining or any associated development on the existing leases. Similarly, associated requests (such as the lease modification request) would not be approved. The No Action Alternative would not provide ore for the CPO and would leave the mineral resource unmined. The resources would not be developed under the 2011 Mine and Reclamation Plan. However, the No Action Alternative does not preclude future mine and reclamation plans for the Lease.

ES.3 AGENCY PREFERRED ALTERNATIVE

The RCA is the Agency Preferred Alternative because it virtually eliminates potential impacts to surface water from COPCs because it uses an alternative ore haul road that eliminates nearly all adverse effects to wetlands and riparian areas, because it eliminates water management issues that would result from mining below the water table, because it reclaims areas of the existing South Rasmussen Mine that would have otherwise remained unreclaimed thus enhancing wildlife habitat, because it maximizes ore recovery, and because it does not use an overhead power line.

ES.4 ENVIRONMENTAL EFFECTS

The environmental effects of the Proposed Action were evaluated and compared to the alternatives described in **Chapter 2**. A summary of the primary environmental effects of the

Proposed Action and alternatives is presented in **Table 2.9-1**. The environmental effects are discussed in detail in **Chapter 4** and are discussed briefly in the following narrative. Environmental effects are discussed specifically in terms of the areas of disturbance or areas of direct effects of the Proposed Action, the RCA, and the No Action Alternative. Baseline and comparative data for analysis are also discussed in terms of analysis area and, in some cases survey or sampling areas for a resource. The Study Area encompasses the Proposed Action and anticipated elements of the alternatives for which baseline studies were conducted. The Study Area is larger than the Proposed Action. In addition, individual resource sections may discuss an analysis area that is larger than the Study Area. The analysis area may include areas of indirect effect or adjoining areas that are connected by hydrology, topography, or socioeconomic factors. An attempt was made for each environmental resource to determine the extent to which the environmental effect could be reasonably detected, and then include the geographic areas of resources that would be impacted by the environmental effect. Effects are described in terms of context (site-specific, local, or regional effects), duration (short- or long-term), and intensity (negligible, minor, moderate, or major).

ES.4.1 Geology, Minerals, and Paleontology

The Proposed Action would remove approximately 34.6 million bank cubic yards (MBCY) of overburden and result in approximately 440 acres of surface disturbance. This would pose a major, long-term, and local effect on geology and mineral resources. Geological and mineral resources would be directly affected by the removal of phosphate ore and overburden.

The Proposed Action would leave exposed pit walls extending above the reclaimed pit backfill. These pit walls would be susceptible to minor slope failures or surface weathering. Overall potential effects of pit wall instability under the Proposed Action would be short-term and negligible.

The Proposed Action would have three overburden piles (North, South Main, and South-South) and an optional ore stockpile, all downslope of the mine pit. Infiltration of meteoric water through the overburden piles and ore stockpile would generate seepage with elevated concentrations of selenium and other COPCs that could be released into groundwater or surface water. Many COPCs are likely to be mobile in seepage from the overburden and ore storage facilities at levels of regulatory concern.

The locations of two of the proposed external overburden piles in the Proposed Action overlie areas of geotechnical instability, which could contribute pile to slope failures and resulting impacts to down slope areas and to the potential for additional seepage of elevated concentrations of COPCs into shallow groundwater and nearby surface waters. Overall potential effects of slope instability under the Proposed Action would be long-term and moderate. The effect of slope failure adding COPCs to the shallow groundwater and surface waters would be long-term and moderate.

The RCA would have no external overburden piles or ore stockpiles downslope of the mine pit. All overburden would be backfilled into the existing South Rasmussen Mine pit or the mined-out pit and upslope overfill piles. Infiltration of meteoric water through overburden would be confined to pit backfill and overfill.

As with the Proposed Action, overall potential effects of slope instability under the RCA would be short-term and negligible.

Under the No Action Alternative, the mine would not be developed, and there would be no overburden piles or ore stockpiles that could be affected by infiltration of meteoric water.

Paleontological resources could be affected by removal of ore and overburden. Geologic deposits that would be affected by the Proposed Action or RCA may contain scientifically significant fossils, but these formations have not been exposed in the analysis area and have not been evaluated for their potential fossil content. Under the BLM Potential Fossil Yield Classification (PFYC) system (BLM 2007), the Dinwoody and Wells Formations have been classified regionally as PFYC 3a and the Phosphoria Formation has been classified as PFYC 5a. PFYC 3a are formations considered to carry a moderate potential to contain scientifically significant fossils. In general, paleontological resources contained in these formations are invertebrate fossils not considered to be important or restricted to the analysis area. PFYC 5a are formations considered to carry a very high potential to contain scientifically significant fossils.

Construction of facilities under the Proposed Action could disturb approximately 25 acres of the Dinwoody and Wells Formations (PFYC 3a). Construction under the Proposed Action could disturb about 60 acres of the Phosphoria Formation (PFYC 5a). The Proposed Action carries a moderate to high potential to encounter and adversely affect scientifically significant but regionally common invertebrate paleontological resources. With required mitigation, effects to paleontological resources would be long-term and minor.

The RCA would remove approximately 42.4 MBCM of overburden and result in approximately 400 acres of surface disturbance. Like the Proposed Action, this would have a major, long-term, and local effect on geology and mineral resources. Relative to the increase in ore recovery, the RCA would result in a much smaller area of surface disturbance. The RCA would also affect paleontological resources. Under the RCA, the mine pit would be expanded, and a higher volume of PFYC Class 5a geologic units would be disturbed by excavations than under the Proposed Action. Surface disturbances in areas of the Phosphoria Formation would affect approximately 67 acres, 7 acres more than under the Proposed Action. Surface disturbances would affect approximately 65 acres of the Dinwoody and Wells Formations, 40 acres more than under the Proposed Action. As a result, the potential for impacts to paleontological resources would also be higher under the RCA. The RCA could offer a beneficial effect for paleontology through the discovery and documentation of previously undocumented paleontological resources. Overall, the effects to important paleontological resources would be long-term and minor.

Under the No Action Alternative, the proposed mine would not be approved, and there would be no new disturbance as a result of this mine.

ES.4.2 Air Resources, Climate, and Noise

ES.4.2.1 Air Resources

Air resource impacts for the Proposed Action include fugitive dust, and gaseous emissions that would occur during drilling, blasting, excavation, materials handling, vehicle operations, ore screening, haul road usage, wind erosion, a boiler, and other generators. The Proposed Action includes relocating equipment and operations from the North Rasmussen Ridge Mine to operate the Proposed Action. Proposed Action mining would commence as the operations at Rasmussen Ridge Mine are finalizing. Generally, the air resource impacts generated during the normal operations from the Rasmussen Ridge Mine would represent similar levels of noise and emissions for the Proposed Action. The Proposed Action would result in effects to air quality during drilling, blasting, excavation, materials handling, ore crushing and screening, and vehicle operations. BMPs and protective measures would reduce impacts to air quality. Construction activities would result in short-term, minor effects to air quality. Activities at the Rasmussen Ridge Mine would gradually conclude as equipment is moved to develop the Rasmussen Valley Mine. The Proposed

Action would replace comparable existing activities at the Rasmussen Ridge Mine. The majority of air emissions are from fugitive dust and equipment emissions. Levels similar to those currently occurring would occur during operation of the Proposed Action. The impacts from the Proposed Action to air resources would be short-term and negligible.

Air emission impacts for the RCA are similar to those for the Proposed Action for gaseous emissions but would produce higher particulate emissions. The mining equipment and operating hours for the RCA would remain the same as those for the Proposed Action; therefore, the tailpipe and stationary air emission impacts are estimated to be the same. The RCA eliminates overburden piles downslope of the pit and reduces the frequency of overburden pile disturbance. The total surface disturbance of the RCA would be approximately 40 acres less than that associated with the Proposed Action. HR-5 would be approximately 3 miles longer than the Proposed Action HR-1, increasing vehicle emission, but the overall potential air emissions would be lower than those for the Proposed Action. Generally, the RCA would only impact differently from the Proposed Action for particulate emissions from mining operations such as hauling, material handling, and wind erosion. The impacts from the RCA to air resources would be short-term and negligible.

Under the No Action Alternative, direct impacts to air emissions from activities in the Proposed Action would not occur. Air emissions would be reduced from existing conditions as activities conclude at the Rasmussen Ridge Mine.

ES.4.2.2 Climate

Greenhouse gas (GHG) emissions are known to affect climate. Mining involves combustion of diesel and gasoline for operation of mining and support equipment, which contribute GHG emissions to the atmosphere. GHG emissions from the Rasmussen Valley Mine operations would be similar to those from the current operations at the Rasmussen Ridge Mine. These emissions are below the current U.S. Environmental Protection Agency (USEPA) reporting threshold of 25,000 metric tons in combined GHG emissions per year. The Proposed Action would not be subject to the GHG reporting program. The assessment of GHG emissions and their relationship to climate change is in its formative phase; therefore, it is not yet possible to know with confidence the net impact to climate from the Proposed Action, or the potential effect of those uncertain changes in climate on the Proposed Action. Effects of the Proposed Action on GHG emissions and climate change would not be different from existing conditions and would not continue after the mine is closed. The effects of the Proposed Action on climate change would be short-term and negligible.

The RCA would employ GHG-emitting stationary sources nearly identical to those associated with the Rasmussen Ridge Mine during the active mining period of 4.8 years. Potential contribution to climate change from the RCA would be the same as that described for the Proposed Action: short-term and negligible.

Under the No Action Alternative, the effects of GHG emissions to climate change from the activities in the Proposed Action or RCA would not occur. GHG emissions would be reduced from existing conditions as activities conclude at the Rasmussen Ridge Mine.

ES.4.2.3 Noise

Noise from equipment operation, vehicle use (both on site and on the area road system), and blasting can affect the environment for humans and wildlife (including the quality of the

recreational user's experience on a given property), potentially diminishing the quality of that site for a particular endeavor. Sensitive noise receptors include residential areas, schools, and hospitals. The nearest residences are located approximately 0.5 mile from the Study Area. Other residences are located several miles southwest, closer to Soda Springs. Current mine activities pose only minor noise impacts on any off-site human receptors because the distances to the nearest occupied areas are sufficient to attenuate the noise of the heavy equipment to near background levels.

Noise from operation of the Proposed Action would be generated by site equipment, blasting, drilling, and traffic. The overall mine generation noise profile would be minimally changed from current activities at the Rasmussen Ridge Mine. The noise profile would be unchanged from the existing conditions, and changes in the locations of noise-generating activities would be negligible at all off-site receptors. The noise effects from the Proposed Action would be short-term and negligible or minor at the closest residence as a result of the distance from the mine.

Potential impacts of noise under the RCA would be the same as those for the Proposed Action.

Under the No Action Alternative, direct impacts of noise from the activities in the Proposed Action would not occur. Mining-related noise would be reduced from existing conditions as activities conclude at the Rasmussen Ridge Mine.

ES.4.3 Water Resources

The Proposed Action may affect surface waters through changes in the volume and timing of surface runoff and flow patterns, and by the introduction of pollutants such as sediments, selenium, and other COPCs. Potential impacts to water resources were evaluated using numerical models to estimate seepage rates from the proposed mine facilities and to simulate the transport of COPCs in groundwater and determine the additive impacts to surface water. The Proposed Action would increase hydrologic disturbance in the Angus Creek-Blackfoot River sub-watersheds by 1.59 percent. This would raise the total hydrologic disturbance in the Angus Creek-Blackfoot sub-watershed to 25.18, which is lower than the USFS guideline of 30 percent. There would be no disturbance on USFS lands in the Lower Lanes Creek or Diamond Creek sub-watersheds. Impacts to watershed area disturbance would be minor, local, and long-term, lasting until vegetation has fully re-established and trees have reached the sapling/pole size class. Overall effects to water resources under the Proposed Action would be long-term and minor and would exhibit different duration and intensity between surface water and groundwater.

The RCA would result in reduced effects to water resources in comparison to the Proposed Action. The RCA would eliminate mining below the water table, thus eliminating the need to distribute thousands of gallons per minute (gpm) of dewatering pumpage on un-reclaimed backfill, eliminate external overburden piles downslope of the pit, thus eliminating loading of COPCs to shallow groundwater and downgradient surface waters. Numerical modelling of the RCA store-and-release cover (Cover C) performance calculated an average net percolation of 0.14 inch per year. Because of the elimination of mining below the water table, use of Cover C, and the elimination of the external overburden piles downslope of the mine pit, the effects of the RCA to water resources would be much less than those of the Proposed Action. The overall effects of the RCA to water resources would be long-term and negligible.

The RCA would increase hydrologic disturbance in the Angus Creek-Blackfoot River sub-watersheds by 1.65 percent during mining. The total new hydrologic disturbance would be 0.06 percent higher than that under the Proposed Action in the Angus Creek-Blackfoot River sub-

watershed, and would be the same as the Proposed Action for the Lower Lanes Creek and Diamond Creek sub-watersheds. The total hydrologically disturbed area would meet the USFS guideline of less than 30 percent in all three sub-watersheds.

ES.4.3.1 Surface Runoff and Flow

Reduction of runoff resulting from Proposed Action would be 4.14 percent in the Angus Creek-Blackfoot River and 0.03 percent in Lower Lanes Creek sub-watersheds. There would be no change in the Diamond Creek sub-watershed. Total runoff reduction to Blackfoot River would be less than 1 percent. Impacts to runoff reduction would be considered minor to negligible, local, and limited to the duration of mining. Haul roads have the potential to affect peak flows through the diversion of flow through in-slope ditches and cross-drains, and through potential constrictions of flow at stream crossings or culverts. Potential alterations to peak flow would be minor, local, and short-term. Long-term effects to streamflow from haul roads would be negligible. The permanently realigned county roads would have minor, localized impacts that would be long-term.

Construction of four overburden piles downslope of the pit would alter the natural flow patterns by diverting the flow away from the natural channels. Although the intermittent drainages affected by two of the piles would be re-established after reclamation, the drainages affected by the North and South-South Overburden Piles would be permanently diverted.

Pit dewatering under the Proposed Action to facilitate mining below the regional groundwater table near the southern end of the excavation is expected to result in moderate but localized impacts to water levels in the Wells Regional Aquifer for about 10 to 11 months starting during Phase 1 mining. The projected maximum drawdown in the Wells Regional Aquifer would be approximately 60 feet. Temporary drawdown of shallow groundwater levels west of the pit near Angus Creek is predicted to be negligible. Dewatering is not predicted to measurably affect Angus Creek and Blackfoot River streamflows. However, some minor, localized, temporary stream depletions may occur at lower reach of Springs Creek.

Runoff reduction under the RCA would be 4.06 percent in the Angus Creek-Blackfoot sub-watershed; 2 percent lower than under the Proposed Action. Differences in runoff reduction to Blackfoot River between RCA and Proposed Action would be negligible. Total runoff area reduction compared to the Proposed Action would be 4.06 percent of the Angus Creek-Blackfoot River sub-watershed.

Potential impacts to alterations in peak flow under the RCA would be the same as those for the Proposed Action.

While there would be up to four external GM stockpiles constructed within intermittent drainages downslope of the mine pit, these would all be reclaimed after the cessation of the mining activities, and there would be no permanent diversions from original stream channels under the RCA.

There would be no impacts from dewatering under the RCA because there would be no mining below the water table. Consequently, there would be no drawdown in the aquifer, and there would be no indirect effects to streamflows.

ES.4.3.2 Groundwater

Under the Proposed Action, capping of the permanent overburden piles and pit backfill would permanently reduce the amount of recharge reporting to groundwater by approximately 8 percent

from a pre-mining 2.6 inches per year to a permanent 2.4 inches per year. Long-term decreases in shallow groundwater levels by reduced infiltration through reclaimed areas would be minor and localized, and in the Wells Regional Aquifer would be negligible. The Proposed Action would result in moderate impacts to groundwater quality in the local-, intermediate-, and regional-scale aquifers. Seepage from mine facilities would result in increased loading of selenium and other COPCs to groundwater. These COPCs would be transported northwest in the Wells Regional Aquifer and southwest in the local and intermediate aquifers, forming plumes with higher COPC concentrations than the unaffected groundwater. Seepage and groundwater movement through the backfilled pit would also result in the release of COPCs into the Wells Regional Aquifer at concentrations that exceed Idaho groundwater quality standards.

Installation of the RCA cover over the backfill and overfill under the RCA would reduce seepage to the Wells Regional Aquifer to 0.14 in./yr. on average compared to the 2.4 in./yr. for the Proposed Action. The RCA cover design has a much lower infiltration rate than the Proposed Action cover.

Elimination of external overburden piles downslope of the pit would eliminate impacts from COPC loading to shallow and intermediate groundwater and the resulting impacts to surface water. The RCA would also result in reduced loading of COPCs to the Wells Regional Aquifer compared to the Proposed Action.

ES.4.3.3 Surface Water Quality

Under the Proposed Action, short-term effects to surface water quality that could occur from increased suspended sediment and turbidity from disturbances related to construction would be controlled by the use of BMPs, sediment control structures, and slope stabilization. There would be no long-term effects. Cover systems on the backfill and overburden piles would prevent contact of runoff with overburden, preventing direct contamination of surface water by selenium and other COPCs. The Proposed Action would result in negligible, local, and short-term impacts to surface water quality. Meteoric water that infiltrates and percolates through the external overburden piles are predicted to result in COPC loading to the alluvial aquifer, where the COPCs would be transported west in groundwater toward Angus Creek and the Blackfoot River, potentially introducing COPCs to these surface waters. The COPCs transported in groundwater from the facility may be attenuated by dilution, precipitation, or adsorption. The Proposed Action would result in the release of COPCs into the Wells Regional Aquifer at concentrations that exceed Idaho groundwater quality standards. Impacts to surface water quality would be considered minor to moderate and long-term.

Potential impacts to water quality from sedimentation and runoff under the RCA would be the same as those for the Proposed Action. The potential for impacts of COPCs to surface waters would be essentially eliminated as a result of the elimination of the down slope external overburden piles under the RCA.

Under the No Action Alternative, the Rasmussen Valley Lease would not be mined, and there would be no effects to water resources beyond the existing conditions.

ES.4.4 Soils

Direct impacts to soils from mining and construction include increased erosion, soil compaction, decreased soil productivity, and potential contamination of soils from chemical spills during transport, storage, or use. Indirect impacts to soils are not expected. Except for contamination by spills, these impacts would decrease soil productivity by impacting soil structure, increasing runoff

and soil loss, decreasing permeability and infiltration, and damaging soil microorganisms. Overall direct impacts from construction of the Proposed Action would be moderate, local, and long-term. The Proposed Action would create 440 acres of surface disturbance. Approximately 422.5 acres would be reclaimed. The remaining 17.5 acres would include unreclaimed pit walls and permanently realigned county roads. Reclamation would reduce the long-term impacts to minor. The majority of undisturbed soils that would be disturbed by the Proposed Action are soil types with low erosion hazards, but disruption of vegetative cover and soil aggregates would result in a short-term increase in soil erosion and sediment transport. Overall, erosion rates are expected to decrease as portions of the Proposed Action are reclaimed and vegetation cover is established.

Estimated volumes of available GM indicate that sufficient soils are present within the area to be disturbed to meet cover requirements. No soils from areas outside disturbed areas are proposed for use as GM. Salvaged GM would be stored in stockpiles. Soils salvaged for future use as GM would be mixed and would not be segregated. During reclamation, any surplus GM beyond that required for minimum thickness of reclamation would either be placed to a thicker depth (other than on a designed cap and cover), or placed in GM stockpiles for later use. Overall, effects to soils under the Proposed Action would be long-term and moderate, but much of the impact would reduce over time with the success of reclamation.

Impacts to soils under the RCA would be the same as those described for the Proposed Action. The intensity of effects would be slightly different than the Proposed Action in response to differences in location and extent of disturbances. The total area of surface disturbance under the RCA would be 400 acres, 40 acres less than the Proposed Action. Approximately 381 acres of this disturbance would be reclaimed. As in the Proposed Action, pit walls and permanently realigned county roads would remain unreclaimed. The RCA would also create less disturbance on soils with moderate or high erosion hazards.

Overall adverse effects to soils under the RCA would be less than under the Proposed Action and would be long-term and minor to moderate. As under the Proposed Action, much of the impact would reduce over time with the success of reclamation.

Under the No Action Alternative, existing soil resource trends would continue, and there would be no new impacts to soil resources.

ES.4.5 Vegetation, Riparian Areas, and Wetlands

Over the life of proposed mining activity, the Proposed Action would remove 399 acres of upland vegetation and 20.5 acres of wetlands and non-wetland WOUS. Most of the wetland impacts (17.5 acres) would occur in Category III wetlands. Impacts to vegetation would be major and long-term. Overall, effects of the Proposed Action to upland vegetation, particularly to woodland communities, would be long-term and major. Reclamation would re-establish vegetation cover, but the species composition and community structure would be different.

Impacts to vegetation from the RCA would be similar to those associated with the Proposed Action. The RCA would remove approximately 391 acres of vegetation including 0.3 acre of wetlands. The combined total disturbance to vegetation is approximately 19 acres less than the Proposed Action. The impacts to wetlands only would be 20.2 acres less than the Proposed Action. As with the Proposed Action, most wetland impacts would be to Category III wetlands. Overall impacts would be major and long-term. Reclamation would eventually re-establish vegetation cover, but the species composition and community structure would differ from pre-mining conditions.

Under the No Action Alternative, the Rasmussen Valley Lease would not be developed, and there would be no new impacts to vegetation.

ES.4.6 Terrestrial Wildlife

The Proposed Action would have immediate direct effects to wildlife mortality, disturbance, and displacement; and changes in wildlife behavior and composition associated with long-term changes in land cover. Wildlife may also be affected by exposure to selenium and other COPCs. Indirect effects from habitat alteration would be localized and long-term. The Proposed Action would result in the loss of approximately 399 acres of forested and shrubland habitat and 20.5 acres of wetland and riparian habitat. Overall, depending on the season and species, disturbance and displacement impacts to terrestrial wildlife would be long-term and negligible to minor.

The RCA would have impacts to terrestrial wildlife similar to those associated with the Proposed Action. The total acreage of upland wildlife habitat affected would be approximately 20 acres less than the Proposed Action. In addition, the RCA would disturb approximately 20 fewer wetland acres. The use of an existing haul road and backfill of overburden in a previously disturbed area would also consolidate new disturbance and result in less habitat fragmentation than the Proposed Action. Overall, impacts to wildlife under the RCA would be reduced compared with the Proposed Action. Depending on the season and species, overall disturbance and displacement impacts would be long-term and would range from negligible to minor.

Under the No Action Alternative, the Rasmussen Valley Lease would not be developed, and there would be no new impacts to wildlife from the proposed mining.

ES.4.7 Fisheries and Aquatic Species

The Proposed Action would result in direct impact to 20.5 acres of wetland habitat and would also impact stream channels in the Study Area. There would also be indirect impact to aquatic habitats within and adjacent to the Study Area. Clearing of vegetation in the Study Area could contribute to increased soil erosion and sediment loading in local drainages. This could result in altered stream morphology, choking out of aquatic plants, and changes in fish and aquatic invertebrate communities. BMPs for sedimentation and capturing of surface runoff during mining would decrease the severity of these potential impacts. However, the reduced quantity of water resulting from capture of runoff could also result in the drying of some aquatic habitats downstream of the Proposed Action. The Proposed Action would also impact 86 acres of AIZ, which could result in increased water temperatures, decreases in natural sediment filtration, changes in channel morphology, loss of instream wood recruitment, and decrease in inputs of organic matter as energy. Culverts would be designed so that a minimum depth of water for fish passage is always available. BMPs and design features would be implemented to minimize sedimentation that could adversely affect fish. Under the Proposed Action, direct loss of aquatic habitat would be controlled and mitigated. Effects to these resources would be negligible to minor, but would be long-term.

Macroinvertebrates would be impacted by changes in sedimentation and changes to AIZs resulting from the Proposed Action. These impacts would change the physical characteristics of the aquatic environment. Changes in the macroinvertebrate community may include temporary increases in the abundance of some species and decreases in the abundance of other species that are less tolerant of changes in turbidity. Macroinvertebrate community composition would also be impacted by removal of vegetation in the AIZ.

Direct mortality of amphibians and reptiles may occur in wetland, riparian, and stream habitats disturbed by the Proposed Action, including 20.5 acres of wetland and riparian areas. In addition,

direct mortalities may occur on haul roads when individuals move between wetland habitats. Amphibians are also susceptible to selenium toxicity and to the effects of other COPCs.

The RCA would impact 20 fewer acres of wetland habitat than the Proposed Action. The majority of RCA disturbance would occur in upland habitats. The RCA would also impact 69 fewer acres of AIZ than the Proposed Action. Overall, impacts to aquatic resources including fisheries would be negligible and long-term under the RCA. The RCA was developed to avoid most impacts to aquatic resources.

Impacts to macroinvertebrates under the RCA would be less than those associated with the Proposed Action. Macroinvertebrates may be affected by sedimentation and changes to the AIZ. There should be only 11 acres of impact to the AIZ under the RCA compared to 86 under the Proposed Action. The RCA would also virtually eliminate the potential to contribute selenium and other COPCs to surface water. Overall, the impacts of the RCA on aquatic macroinvertebrates would be negligible and long-term.

The RCA does not include any crossings of fish-bearing streams. The RCA would comply with BLM and USFS guidelines for the maintenance of instream flows and would not fragment fish habitat. The potential for the bioaccumulation of selenium and other COPCs in the aquatic food chain would be lower under the RCA. Overall, impacts of the RCA on fish populations would be negligible. Most wetland, riparian, and aquatic habitat would be avoided under the RCA. Consequently, impacts on amphibians and reptiles would be negligible.

Under the No Action Alternative, the federal phosphate leases would not be developed. The No Action Alternative would result in no new impacts in the Study Area.

ES.4.8 Threatened, Endangered, or Sensitive Species

Threatened, endangered, or sensitive species include threatened, endangered, and proposed candidate species; Caribou National Forest (CNF) sensitive species and management indicator species and BLM sensitive species; and special status plants. Threatened, endangered, and proposed candidate that may occur in the analysis area are Canada lynx and greater sage-grouse. Sensitive species and management indicator species that may occur in the analysis area are gray wolf, wolverine, Townsend's big-eared bat, special status raptor species, Columbian sharp-tailed grouse, small birds, special status migratory and water birds, special status reptiles and amphibians, and special status fish. There are no identified threatened, endangered, and proposed candidate plant species, CNF sensitive plant species, CNF Forest Watch rare plant species, or BLM sensitive plant species in the analysis area. The potential effects of the Proposed Action and alternatives on these species varies primarily in terms of the presence or absence of optimum or critical habitat in the analysis area and whether they depend primarily on upland or wetland habitat. Overall, impacts to threatened and special status species from the Proposed Action would be long-term and negligible to moderate.

Overall, impacts of the RCA on threatened, endangered, and special status species would be less than the Proposed Action, but similar in nature. The overall impact of the RCA on threatened and special status species would be long-term and negligible to minor.

Canada lynx, gray wolf, wolverine, greater sage-grouse, and Columbian sharp-tailed grouse may range into the analysis area or may occur in limited numbers. In general, the habitat in the analysis area is marginal for these species.

Under the Proposed Action or RCA, wide-ranging species like the Canada lynx, gray wolf, and wolverine would avoid these marginal habitats. The greatest effects to these species would be from the loss of 83 acres of marginal aspen forest foraging habitat under the Proposed Action and 103 acres of this habitat type under the RCA. Given the marginal and patchy nature of the habitat and the large foraging ranges of these species, adverse impacts would be negligible.

Greater sage-grouse and Columbian sharp-tailed grouse have been observed sporadically in the analysis area. The existing sagebrush communities do not provide optimum habitat for either grouse species.

Disturbance of marginal sagebrush habitat under the Proposed Action may result in displacement of individuals, long-term habitat loss, and fragmentation of habitat. These impacts are expected to be negligible to minor.

The RCA would disturb 47 acres less sagebrush habitat than the Proposed Action, and impacts to greater sage-grouse and Columbian sharp-tailed grouse would be less than the Proposed Action.

Under the No Action Alternative, the federal phosphate lease would not be developed. The No Action Alternative would result in no new impacts to these species.

Townsend's big-eared bats may occupy a variety of the habitats in the Study Area. The Proposed Action would result in long-term alteration of about 419 acres of upland woodland and wetland foraging habitat. Overall, impacts would be minor and long-term.

The RCA would impact 20 acres less wetland foraging habitat for the Townsend's big-eared bat than the Proposed Action. Other impacts to the species would be similar to the Proposed Action. Impacts would be minor and long-term.

Under the No Action Alternative, the federal phosphate leases would not be developed. The No Action Alternative would result in no new impacts to Townsend's big-eared bats in the Study Area.

Special status raptors and small birds would be affected principally by disturbance to upland woodlands and shrubland habitat. These habitats are important for both nesting and foraging. These species also use wetland habitat for foraging.

There would be long-term loss of foraging and nesting habitat for special status raptor species and small birds. Noise and human disturbance would temporarily displace the raptors. The Proposed Action would result in permanent loss of 72 acres of aspen habitat and 20.5 acres of wetland and riparian habitat. On a landscape scale, these impacts would be minor.

In general, impacts of the RCA to special status raptor species and small birds would be similar to those associated with the Proposed Action. The RCA would result in long-term loss of 103 acres of aspen forest, 20 acres more than the Proposed Action. On the other hand, the RCA would result in disturbance to 20 acres less wetland and riparian habitat. Overall, impacts would be negligible and long-term.

Special status fish, reptiles and amphibians, and migratory and water birds are more heavily dependent on wetlands and riparian areas. These species would be directly affected by the loss or degradation of wetland habitat and are also more susceptible to potential exposure to selenium and other COPCs. Impacts to these species under the Proposed Action would be moderate and long-term.

The RCA would pose the same types of impacts to special status fish, reptiles, and amphibians, and migratory and water birds as the Proposed Action, but they would be reduced because of the reduced impacts to wetland habitats and improved protection of downstream water quality. Overall impacts to special status water birds would be negligible and long-term

Under the No Action Alternative, the federal phosphate leases would not be developed. The No Action Alternative would result in no new impacts to special status fish, reptiles and amphibians, and migratory and water birds in the Study Area.

ES.4.9 Visual Resources

Under the Proposed Action, impacts to visual resources would include alterations of the existing visual landscape by project components. These components would contrast with the existing visual landscape character, and would remain with somewhat less contrast after reclamation. However, views of the Study Area are limited by the surrounding terrain. The area is viewed by comparatively few people for limited periods of time. The modifications would meet both the Forest Service Visual Quality Objectives (VQO) of modification and the BLM Visual Resource Management (VRM) objectives for the area. Overall, the impacts of the Proposed Action to scenic attractiveness would be long-term and minor.

Under the RCA, there would be no overburden piles on the downslope side of the mine pit, and the GM stockpiles in that area would be temporary. Although the overall mine pit of the RCA would be slightly larger than in the Proposed Action, the individual pit phases and associated stockpiles would be less noticeable than those of the Proposed Action. As in the Proposed Action, the landscape modifications would meet both the Forest Service VQO of modification and the BLM VRM management objectives for the area. The overall impacts of the RCA to scenic attractiveness would be long-term and negligible.

Under the No Action Alternative, the mine would not be developed, and there would be no new impacts to visual resources.

ES.4.10 Land Use, Access, and Transportation

ES.4.10.1 Grazing

The Proposed Action would render total of 967 acres of the Rasmussen Valley Cattle Allotment (RVCA) unusable for grazing, including almost all of Unit 3A in the Study Area. Although impacts to some grazing units would be major, impacts to the RVCA as a whole would be minor. The grazing lands would not be displaced all at once, but progressively as mining activities proceed, and thus portions of the grazing lands within the Study Area may remain accessible during mining activities.

In contrast, only about 9 acres of the Henry Olsen Sheep and Goat Allotment (HOSGA) would be unusable. This is about 0.08 percent of the allotment. The impact to the HOSGA would be negligible.

When areas are reclaimed, the vegetation in the early stages of reclamation may be more favorable for forage production than the pre-mine vegetation, although the species diversity would be limited. Overall, impacts of the Proposed Action to grazing would be long-term and negligible to minor.

Impacts to grazing under the RCA would be equivalent to those under the Proposed Action. The additional acreage to be mined and the slight changes in access would not alter the effects of the RCA in comparison to the Proposed Action. The changes to acreage to be mined and sequence of mining would have little if any additional effect on land available for grazing in comparison to the Proposed Action. The overall impacts of the RCA on grazing would be long-term and negligible to minor.

Under the No Action Alternative, the mine would not be developed. There would be no impact to the availability or quality of grazing.

ES.4.10.2 Traffic

Under the Proposed Action, workforce and equipment currently being used at the Rasmussen Ridge Mine would transition to the Proposed Action. This continuation of activities equivalent to existing activities would result in little or no change to workforce or traffic. The impacts on traffic and motorist safety from the Proposed Action would be short-term and negligible.

Overall, impacts on traffic and motorist safety from the RCA would be in slightly different locations than the Proposed Action, but would also be short-term and negligible.

Under the No Action Alternative, the mine would not be developed. Traffic on public roadways would be reduced in comparison to existing conditions.

ES.4.10.3 Recreation

Approximately 1,008 acres of federal lands and 833 acres of state lands open for recreation are included in the Proposed Action. Of that, approximately 410 acres are located in the Blackfoot River WMA. Given the industrial nature of the Proposed Action, it is conservatively assumed either that recreation would be prohibited on these lands during the duration of the Proposed Action, or that recreationists would not choose to use these lands.

The acreage of lands available for recreation that would be reduced under the Proposed Action is negligible at the local and regional scales given the large acreage that would remain available.

The Proposed Action does not include any developed recreational facilities in the Study Area. There are sections of some designated trails that would be lost from use. These impacts would be moderate and site-specific, but negligible at the local and regional scales.

Overall, the impacts of the Proposed Action to recreation would be long-term, moderate, and site-specific, but negligible at the local and regional scales.

The RCA would have effects to wildlife similar to those described under the Proposed Action. Consequently, impacts to hunting and other upland wildlife-related recreation would be the same. The effects of the RCA to wetlands would be less than the Proposed Action and would have less effect on aquatic species including game fish. Overall, the impacts of the RCA to recreation (like those of the Proposed Action) would be long-term, moderate, and site-specific, but negligible at the local and regional scales.

Under the No Action Alternative, the mine would not be developed. There would be no new impacts to recreation or recreationists. Impacts affecting access to recreation and enjoyment of the rural habitat would be reduced in comparison to existing conditions.

ES.4.11 Cultural Resources

The entire area of potential effects (APE) of the Proposed Action and RCA has been inventoried for the presence of historic properties (cultural resources eligible for the National Register of Historic Places [NRHP]). The Survey Area for cultural resources included 2,793 acres on Rasmussen Ridge, in Rasmussen Valley, and in adjacent areas. This included areas surveyed for alternative elements that were not analyzed in detail. The survey found or revisited 28 cultural resource sites. All of these sites have been recommended to be not eligible for the NRHP. The CTNF and the Idaho State Historic Preservation Office (SHPO) have concurred with these recommendations. Therefore, no historic properties have been identified in the Survey Area. The results of cultural resources studies have been considered in the development of the Proposed Action and RCA.

There are no historic properties in the APE of the Proposed Action. The Proposed Action would have no adverse effect to historic properties.

There are no historic properties in the APE of the RCA. The RCA would have no adverse effect to historic properties.

Under the No Action Alternative, the Rasmussen Valley Mine would not be developed, and there would be no adverse effect to historic properties.

ES.4.12 Tribal Treaty Rights and Interests

There would be no changes to land status associated with the Proposed Action, and those portions of the Proposed Action that are currently unoccupied public lands would retain that status. There would be substantial areas of disturbance from mining and associated activities on those public lands. The Shoshone and Bannock Tribes would experience short-term loss of access to those public lands to exercise treaty rights and traditional uses. That access would be restored at the completion of mining. Other short-term effects would be associated with the disturbance or displacement of plant and wildlife species that are used for subsistence and traditional purposes. Effects of the Proposed Action to known treaty rights and interests would be long-term and negligible. Overall impacts to traditional resources would be long-term and minor.

Under the RCA, the nature and locations of disturbance would be similar to those associated with the Proposed Action, with less extensive disturbance in Rasmussen Valley. The short-term and long-term impacts under the RCA would be 40 acres less than the impacts under the Proposed Action, and virtually none of this impact would be to wetlands and related resources. Adverse effects to tribal treaty rights, interests, or traditional concerns have not been identified for the RCA. Overall, impacts to traditional resources would be long-term and minor.

Under the No Action Alternative, the Rasmussen Valley Mine would not be developed, and there would be no adverse effects to known Tribal treaty rights and interests.

ES.4.13 Social and Economic Conditions

The Proposed Action would take effect during the shutdown of the Rasmussen Ridge Mine. The existing work force and associated services would transfer to the new mine. Effects to population, housing, community services, employment, income to local and regional businesses, taxes and other revenues, and property values would be negligible. Effects to tourism and recreation from

restricted access to mine property during operations would also be negligible. Overall, impacts of the Proposed Action to social and economic conditions would be positive, short-term and major.

Effects of the RCA to social and economic conditions would be the same as the proposed Action.

Under the No Action Alternative, the mine would not be developed. There would be major effects to employment, income to local and regional businesses, taxes and other revenues, and property values in Caribou County and lesser effects in neighboring counties. There would also be moderate effects to population and housing resulting from unemployment. Overall, impacts of the No Action Alternative to social and economic conditions would be negative, long-term and major.

ES.4.14 Environmental Justice

There are no communities in the vicinity of the Proposed Action that are minority as a whole, and none would be exposed to high and adverse environmental effects. Because the Shoshone-Bannock Tribes of the Fort Hall Reservation, approximately 30 miles from the Study Area, have treaty rights and interests in public lands in the region, the Proposed Action could have disproportionate impacts on the population of the Reservation. These potential effects are addressed in Tribal Treaty Rights and Interests. Impacts of the Proposed Action to remaining populations using the analysis area would be long-term and negligible.

The environmental justice effects of the RCA would be the same as the Proposed Action.

Under the No Action Alternative, the mine would not be developed, and there would be no new environmental justice effects.

ES.4.15 Hazardous Materials and Solid Waste

Appropriate BMPs, storage, and secondary containment would be used for all hazardous materials and wastes, similar to those currently used at the Rasmussen Ridge Mine. In the event of any inadvertent spills or releases, Agrium would implement its Spill Prevention, Control, and Countermeasure (SPCC) Program. Effects of the Proposed Action on hazardous materials and wastes would be short-term and negligible.

The RCA storage area for fuels and hazardous materials would be at the existing Rasmussen Ridge Mine shop. Management practices for fuels, hazardous materials, and wastes would continue in the same manner as currently implemented at the Rasmussen Ridge Mine. As with the Proposed Action, effects associated with fuels, hazardous materials, and wastes would be short-term and negligible.

Under the No Action Alternative, the proposed mine would not be developed, and there would be no new effects associated with fuels, hazardous materials, and wastes.

ES.4.16 Public Health and Safety

The Proposed Action carries the potential to impact surface waters by introducing pollutants (such as sediment, selenium, and other COPCs) via stormwater runoff and spills and by surface runoff contacting exposed overburden. Agrium would design and implement BMPs to control erosion, sediment, and to minimize the potential for a release of COPCs to protect surface waters in and around the analysis area. In addition, active mining areas would be restricted from public access for security and safety reasons. To avoid damage to and from livestock, Agrium personnel would visually survey the mine areas for livestock daily.

Inadvertent spills and releases of fuels and hazardous materials or wastes may occur. An SPCC Plan would be developed before construction and operations, providing direction for preventing and controlling potential spills and describing BMPs for handling the COPCs.

No adverse effects to public health and safety would occur from implementation of the Proposed Action. The impacts of the Proposed Action to public health would be short-term and negligible.

Under the RCA, potential impacts to public health and safety would be similar to those described for the Proposed Action; however, this alternative would carry less potential for selenium and other COPCs to be released to surface water or to bioaccumulate in the aquatic food chain. No adverse effects to public health and safety are anticipated to occur from implementation of the RCA. The impacts of the RCA to public health and safety would be short-term and negligible.

Under the No Action Alternative, the facilities would not be constructed or operated; therefore, there would be no project-related impacts to public health and safety.

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Appendices

Appendix A	Environmental Monitoring Plan
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